Before the

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C. 20554

In the Matter of

Public Notice Requesting Comment on NTIA Test Data Regarding Potential Interference from Ultra-Wideband Transmission Systems	))))	DA 01-171
Revision of Part 15 the Commission's Rules Regarding Ultra-Wideband Transmission Systems	)))	ET Docket No. 98-153

To: The Commission

COMMENTS

Lockheed Martin Corporation (LMC) herein files its Comments in response to the Federal Communications Commission (Commission) Public Notice issued on January 24, 2001 with respect to the above-captioned proceedings.[1]

Introduction and Summary

In May 2000, the Commission released a Notice of Proposed Rule Making (NPRM) proposing to revise Part 15 of Title 47 of the Commission's Rules to open the way for new types of products incorporating ultra-wideband ("UWB") technology.[2] The proposed revisions would allow certain very low-power UWB systems to operate as unlicensed devices within Part 15 of the FCC rules. Many of the comments filed in response to the NPRM suggested that further testing and analysis was required before the potential for interference from higher-power UWB

[1] *See Public Notice*, DA 01-171 (January 24, 2001).

[2] *See Notice of Proposed Rule Making*, ET Docket No. 98-153 (May 11,2000).

systems is understood.[3] The Commission placed on Public Notice two reports released by the National Telecommunications and Information Administration (NTIA) containing analyses of data it collected regarding the potential for UWB transmission systems to cause harmful interference to U.S. Government operations between 400 MHz and 6000 MHz.[4]

LMC believes that the analyses raise significant questions regarding the potential for harmful interference from some UWB transmissions into FSS earth stations operating in the 3650-4200 MHz band, and that a precondition to the deployment of UWB devices is the development and implementation of an appropriate and enforceable technical regulatory regime.

NTIA test results show potential for UWB interference into FSS earth stations.

The NTIA report describes test results that demonstrate a potential for UWB transmission systems to cause harmful interference into FSS earth stations operating in the 3700-5650 MHz band. Indeed, the NTIA results suggest that UWB operations might have to be constrained with respect to factors such as spectral output power, amount of operating time, and quantity of units operating in any given area.[5] These test results seriously undermine the Commission's earlier conclusion that UWB devices can operate in the bands above 2 GHz without the potential for causing harmful interference to other radio services. [6] Therefore, the

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[3] *See, e.g.*, Comments of the U.S. GPS Industry Council, ET Docket No. 98-153, at 37-41 (filed September 12, 2000).

[4] NTIA Special Publication 01-43, *Assessment of Compatibility between Ultrawideband Devices and Selected Federal Systems* (January 2001), and NTIA Report 01-383, *The Temporal and Spectral Characteristics of Ultrawideband Signals* (January 2001).

[5] "UWB operations between 3.1 and 5.650 GHz and near low elevation 4 GHz FSS earth stations"; NTIA Special Publication 01-43, "*Assessment of Compatibility between Ultrawideband Devices and Selected Federal Systems*", at n. 7 (January 2001).

[6] *See Notice of Proposed Rule Making*, ET Docket No. 98-153 at 13 (¶ 27), (May 11,2000).

Commission's proposal not to restrict UWB devices operating at frequencies above 2 GHz appears to have been, at best, premature. [7]

The NTIA study concludes that of the five types of systems NTIA investigated that operate between 3100 and 5650 MHz, two system types, FSS earth stations and MLS, would be the most sensitive to UWB emissions, and NTIA says that it is continuing to study this important consideration. [8] Moreover, the NTIA study finds that further measurements and analyses are required to determine the effects of the UWB signal duty cycle on the performance of SARSAT and FSS earth stations which have digital signal processing.[9]

The NTIA studies have provided valuable data and insight into the potential interference mechanisms possible from a single UWB device and from the aggregate of multiple UWB emitters. These findings add new and compelling evidence that UWB technology presents a challenge to spectrum managers much greater than that of the typical Part 15 device. LMC is deeply concerned about potential harmful interference from unlicensed and uncontrolled use of UWB emitters. The development of this new and attractive UWB technology, with its broad sweep across wide segments of heavily used portions of the spectrum, could well be jeopardized if the appropriate regulatory environment is not put in place to avoid disruption to sensitive government operations and to protect the billions of dollars of investment in existing commercial operations licensed by the Commission. This new evidence of potentially harmful interference calls for a more deliberate and sophisticated approach by the Commission, including additional testing, to determine the appropriate technical regulatory framework that would support

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[7] *See Id* at 13 (¶ 27).

[8] *See NTIA Special Publication 01-43* at Section 6.3.

[9] *See Id.* at Section 6.2 (Item 3).

unlicensed or licensed operations of UWB devices. Such an approach could also determine which types of UWB devices will require licensing under a new part of the Commission rules.

LMC believes that the results of the NTIA studies indicate that many types of UWB devices will likely require a license, along with associated procedures for operators to coordinate operations to avoid harmful interference. LMC further believes that this proceeding affords the opportunity to implement UWB technology in a way that will not harm other radio services. With the potential for rapid proliferation of UWB devices, it would be a costly mistake to the nation to later find that vital government and commercial services were disrupted by these devices with no way to identify, control or rectify the harmful interference. Such a scenario must be, and can be, avoided by taking steps now to successfully identify and deal with interference situations revealed in the NTIA studies.

The FCC must develop an appropriate technical regulatory framework to ensure that UWB devices operate in a non-interfering manner to authorized services.

LMC believes that the current test data does not yet provide the Commission with sufficient details to establish an appropriate technical regulatory framework for the deployment of UWB devices, particularly considering the many evolving variations of UWB.[10] Furthermore, it is critical that the Commission establish a regulatory framework with the appropriate technical constraints to ensure that any deployment of UWB devices does not cause harmful interference into existing services. Many proposed UWB devices are "portable," suggesting temporary or short-term usage in a wide range of geographical locations. Without proper regulatory criteria, use of portable UWB devices in the vicinity of an FSS earth station may cause "hit and run"

[10] *See id. at 4-7 (¶¶ 7-16) (May 11, 2000).*

disruptions to telephony, data, internet, TV and other types of traffic received at FSS earth stations. Such harmful interference would be unacceptable to users and would violate existing Commission spectrum management policies to protect primary services, operating in accordance with Commission authorizations, from such interference. Therefore, the Commission must take all necessary steps, including further testing, to determine the specifics of a proper regulatory framework, including potential limits, to ensure that UWB devices do not cause harmful interference to other authorized services.

The FCC should initiate a Further Notice of Proposed Rulemaking upon conclusion of all UWB interference test to ensure fair opportunity for public comment.

Significant test data is being submitted to the FCC and being placed on public notice on a rolling basis. While this provides interested parties with an opportunity to submit comments on the individual tests on a piecemeal basis, it does not provide interested parties with any insight as to how the Commission is piecing together these comments to form the basis of a comprehensive regulatory framework, let alone an opportunity to comment on such a comprehensive framework. Given the significance of the issues at hand and the breadth of services impacted by Commission action in this proceeding, it would be inappropriate, as well as poor regulatory policy, to proceed with the issuance of a Report and Order in this proceeding. Therefore, LMC urges the Commission to issue a Further Notice of Proposed Rule Making (FNPRM) to ensure that all interested parties are given a fair and necessary opportunity to assess any rules and regulations that the Commission may wish to establish based on the subsequent individual test results and comments. LMC further believes that the Commission may do so on an expedited basis to

ensure that all services, operational and planned, can have the regulatory certainty necessary to understand their future business risks and opportunities.

In further support of a FNPRM, LMC notes that the Commission has granted a number of Special Temporary Authorizations (STAs) to Time Domain for UWB devices under CFR 47 Part 5, Subpart B on an experimental basis. Given the provision for an "Experimental Report" in Part 5, Subpart E, Section 5.204, subparagraph b, which reads, "The Commission may, as a condition of authorization, request the licensee to forward periodic reports in order to evaluate the progress of the experimental program …," LMC would be interested in knowing whether such reports have been filed and, if so, are they available? If not, the Commission may wish to give consideration to using the experimental licenses to gather test data and information that could prove to be valuable in assessing the interference issues raised in the NPRM and addressed in the NTIA Studies regarding UWB devices. Indeed, such information should be available for review in any FNPRM.

Conclusion

UWB devices have a variety of technical characteristics depending on the intended application. Emission testing of each type of UWB device may prove necessary to establish the appropriate regulatory framework to prevent harmful interference to authorized primary services.

Finally, the Commission must ensure that any rules and procedures promulgated to regulate UWB emissions are made available, in advance, for public comments, and are both effective and enforceable.

Respectfully submitted,

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